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United States
Department of
Agriculture

Forest Service

Tongass
National
Forest

R10-MB-296c



July 1995

Lab Bay Project Area Draft Environmental Impact Statement

Ketchikan Pulp Company Long-Term Timber Sale Contract

SUMMARY

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Lab Bay Environmental Impact Statement



United States
Department of
Agriculture

Forest
Service

Alaska Region

Tongass National Forest
Ketchikan Area
Federal Building
Ketchikan, AK 99901

File Code: 1950

Date: JUN 25 1995

Dear Planning Participant:

Enclosed is the Draft Environmental Impact Statement (EIS) for the Lab Bay Project Area.

If you received a complete set of documents, the following items should be found in the package:

1. Summary
2. Draft Environmental Impact Statement (Volume 1)
3. Draft Environmental Impact Statement Appendices (Volume 2)
4. Large scale color Project Area Map

Note that maps of the alternatives are included in Volume 1.

If you elected to receive the Summary only, you will find maps of the alternatives bound into the document, and will also receive the large scale color Project Area Map.

You are encouraged to review and comment on the Draft EIS. Written comments must be received by September 18, 1995. Comments should be addressed to:

Forest Supervisor
Ketchikan Area
Tongass National Forest
Attn: Lab Bay EIS
Federal Building
Ketchikan, AK 99901

Subsistence hearings will be held in Coffman Cove, Craig, Klawock, Port Protection/Point Baker, Whale Pass, and Wrangell. Each subsistence hearing will be preceded by an open house to answer questions you may have. Additional hearings to receive your comments on the DEIS will be held in Thorne Bay and Ketchikan.



Caring for the Land and Serving People



The schedule of hearings is presented below:

Date	Subsistence/Public Hearing Time	Community	Location
August 17	1:00-3:00 PM	Port Protection/Point Baker	Port Protection Community Building
August 17	5:00-7:00 PM	Whale Pass	Community Center
August 18	7:00-9:00 PM	Thorne Bay	Community Center
August 19	2:00-4:00 PM	Klawock	ANB Hall
August 19	5:30-7:30 PM	Craig	City Council Chambers
August 21	7:00-9:00 PM	Coffman Cove	City Hall
August 22	7:00-9:00 PM	Wrangell	Community Center
August 23	7:00-9:00 PM	Ketchikan	Westmark Cape Fox

I encourage you to take the time to review and comment on the Draft EIS, as well as to participate in the subsistence and public hearings. Your input will be used to prepare the Final EIS and the Record of Decision. Your interest in the management of the Tongass National Forest is appreciated.

Sincerely,



ROBERT L. VAUGHT
Acting Forest Supervisor

enclosures

Lab Bay Project Area Draft Environmental Impact Statement

**Ketchikan Area - Tongass National Forest
U.S.D.A. Forest Service, Alaska**

Lead Agency

U.S.D.A. Forest Service
Tongass National Forest

Responsible Official

Forest Supervisor
Ketchikan Administrative Area
Tongass National Forest
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Abstract

The USDA Forest Service proposes to harvest approximately 85 million board feet (MMBF) of timber in the Lab Bay Project Area, Thorne Bay Ranger District, Ketchikan Administrative Area, Tongass National Forest. Timber volume would be offered to the Ketchikan Pulp Company (KPC) under the KPC Long-term Timber Sale Contract (A10fs-1042) in a series of separate offerings. The actions analyzed in this EIS are designed to implement direction contained in the Tongass Land Management Plan (TLMP 1979, as amended) and the Tongass Timber Reform Act. They also propose management consistent with the TLMP Draft Revision (1991a). The Draft EIS describes five alternatives that provide different combinations of resource outputs and spatial locations of harvest units. The alternatives include: 1) No Action, proposing no new harvest from the Project Area for the KPC Long-term Sale Contract at this time; 2) maximizes harvest volume by including all units that are feasible to harvest at this time under federal and state law and forest-wide standards and guidelines; 3) Modified Proposed Action, emphasizes retaining timber on high vulnerability karst geology and within Draft Interim Habitat Conservation Areas; 4) emphasizes retaining old-growth blocks and corridors by maintaining the integrity of the Project-defined Habitat Conservation Areas; and 5) emphasizes harvest of logical groupings of units within common geographical areas.

Lab Bay Draft EIS

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Summary



Key Terms

Forest-wide Standards and Guidelines - These are the standards and guidelines that apply to all, or most, areas of the Forest. Each management prescription includes a list of those that apply to that land use designation.

Land Use Designation (LUD) - The method of classifying land uses presented in the Forest Plan (Tongass Land Management Plan [TLMP 1979, as amended]).

Management Area (MA) - An area one or more Value Comparison Unit (VCU) in size for which management direction was provided in the Tongass Land Management Plan.

MMBF - Million board feet.

Offering - A Forest Service specification of timber harvest units, subdivisions, roads, and other facilities and operations to meet the requirements of a timber sale contract.

Primary Sale Area (PSA) - The Ketchikan Pulp Company Long-term Sale Contract is comprised of Allotments E, F, G, rest of Area E, rest of Area F, and rest of Area G. For purposes of this EIS, Allotments, E, F, and G constitute the Primary Sale Area and rest of Areas E, F, and G constitute Contingency Sale Areas. The Project Area is within Allotment G.

Record of Decision (ROD) - A document, based on information disclosed in the Final EIS, which identifies the alternative chosen, mitigation and monitoring measures to be implemented, and other information relative to the decision. The Lab Bay ROD will be issued by the Ketchikan Area Forest Supervisor.

Scoping Process - Activities used to determine the scope and significance of a proposed action, what level of analysis is required, what data are needed, and what level of public participation is appropriate.

Tongass Land Management Plan (TLMP) - The 10-year land allocation plan for the Tongass National Forest, also known as the Forest Plan. The TLMP was completed in 1979, amended in 1986 and again in 1991 (TLMP 1979, as amended). The TLMP currently is undergoing revision; the Draft Environmental Impact Statement (EIS) for the Proposed Revised Forest Plan was issued in 1990; a Supplement to the TLMP Revision Draft EIS was issued in 1991 (TLMP Draft Revision 1991a). Reference in the Lab Bay EIS to the TLMP Draft Revision is to the Draft EIS as proposed to be implemented in Alternative P of the Supplement, unless otherwise noted. Until the Draft Revision is approved, the TLMP (1979, as amended) remains in effect.

Value Comparison Unit (VCU) - Areas that generally encompass a drainage basin to provide a common set of areas where resource inventories could be conducted and resource interpretations made.

Overview of the Project

Introduction

In compliance with the National Environmental Policy Act (NEPA) and other federal and state regulations, the Forest Service has prepared this Environmental Impact Statement (EIS) to assess the effects of harvesting timber in the Lab Bay Project Area of northern Prince of Wales Island in Southeast Alaska. This action is proposed to help meet the terms of the Ketchikan Pulp

Summary

Company (KPC) Long-term Sale contract by making approximately 85 million board feet (MMBF) of timber available for harvest. Implementing this action would contribute to a current 3-year timber supply requirement of the KPC contract. It also would move the Project Area toward the desired future condition as described in the Tongass Land Management Plan (1979, as amended) and would be consistent with the TLMP Draft Revision (1991a). Any potential direct, indirect or cumulative environmental effects as well as the irreversible or irretrievable commitment of resources that would result from implementing each of the alternatives is described.

Project Area

The 174,357-acre Lab Bay Project Area is located on northern Prince of Wales Island, approximately 70 air miles northwest of Ketchikan in southeast Alaska (Figure 1). The Project Area includes all National Forest System lands on Prince of Wales Island north of Shakan Bay, Dry Pass, El Capitan Passage, the ridgeline north of Neck Lake, and Whale Pass. Thorne Island, Exchange Island, and other smaller islands along the coastline are also included. Within the Project Area are major drainages associated with Labouchere Bay, Calder Bay, Port Protection, Red Bay, Salmon Bay, Exchange Cove and Whale Pass. Major freshwater lakes within the area include Red Lake, Salmon Bay Lake, and Twin Island Lake. The Project Area provides habitat for numerous species of wildlife and fish. The heavily roaded topography provides opportunities for recreation, subsistence and employment to visitors and residents of nearby logging camps and the communities of Port Protection, Whale Pass, Point Baker, Coffman Cove, Naukati, Thorne Bay, Craig, Klawock, and Ketchikan. In recent years, many caves have been discovered and explored in the area. The visual character also attracts visitors to the area, and represents an important resource for tourism development.

The Proposed Action

The proposed action would harvest approximately 85 million board feet of timber from an estimated 4,550 acres of northern Prince of Wales Island. This would be accomplished through a series of timber sale offerings to Ketchikan Pulp Company (KPC). If KPC rejects an offering, the timber can be offered to any qualified independent bidder. Approximately 80 miles of new road would be constructed and approximately 8 miles of existing road would be reconstructed to facilitate timber removal. A new log transfer facility (LTF) is analyzed in one or more alternatives. The proposed action is consistent with implementation of the Forest Plan, known as the Tongass Land Management Plan (1979, as amended) and with the TLMP Draft Revision (1991a).

Purpose and Need for Action

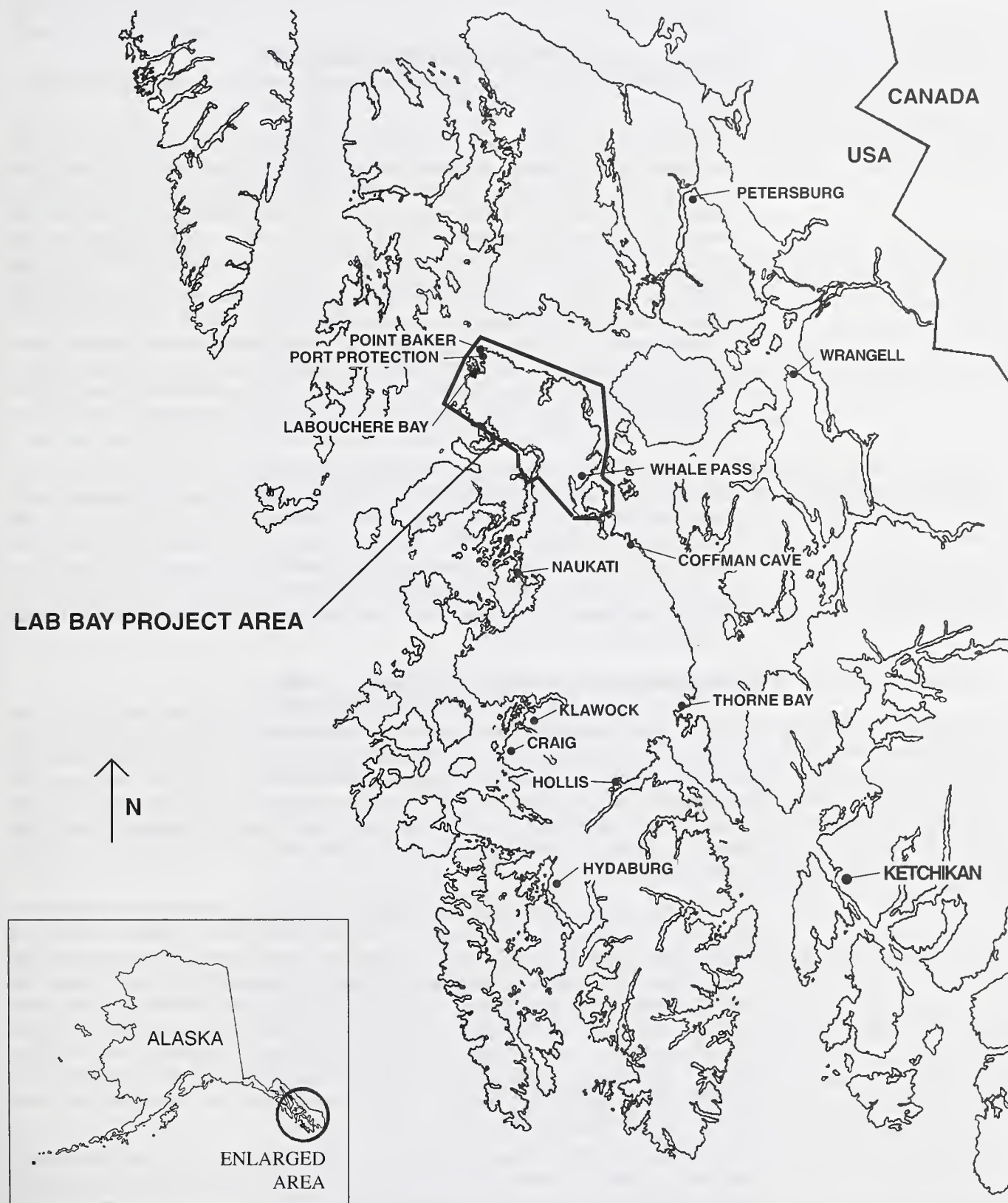
The purpose and need for action is 1) to provide timber volume that will contribute to a 3-year timber supply requirement of the KPC contract (Section BO.61); and 2) to move toward the desired future condition described in the TLMP Draft Revision (1991a) and in a manner consistent with the Management Direction/Emphasis for each Management Area in the current Forest Plan (TLMP 1979, as amended). The alternatives considered in this analysis are consistent with this purpose and need and are responsive to the identified issues.

The Lab Bay Project Area can contribute approximately 85 MMBF of timber, a volume that reflects management direction based on the current schedule to provide a 3-year supply of 615 MMBF of timber for the KPC Long-term Contract. A discussion of sale scheduling on the Ketchikan Area is presented in Appendix A. There is also a need to contribute to the obligation set by Congress under Section 101 of the Tongass Timber Reform Act (TTRA) of 1990, directing the Forest Service "to the extent consistent with providing for the multiple use and sustained yield of all renewable forest resources, seek to provide a supply of timber from the Tongass National Forest which meets annual market demand..."

KPC Long-term Timber Sale Contract

In response to the post-war boom, Japanese interest in Alaska timber, and the desire to establish a stable industry in Southeast Alaska, Congress authorized the Forest Service to develop this and other long-term contracts to supply a total of nearly 23 billion board feet of timber. The Forest Service and KPC signed a Long-term Timber Sale Contract (Long-term Contract) in 1951 to

Figure 1
Lab Bay Project Vicinity



harvest up to 8.25 billion board feet between 1954 and 2004. Timber is to be provided to the KPC from six allotment areas comprising the Primary and Contingency Sale Areas.

The contract directs that timber supplies be found within the Primary Sale Area (PSA) before turning to the contingency areas for volume. The Lab Bay Project Area is entirely within the Primary Sale Area.

Why the Lab Bay Project Area was Selected

The Lab Bay Project Area was selected for environmental analysis at this time for the following reasons:

- The Project Area is within the designated PSA for the KPC Long-term Contract and contains a sufficient volume of harvestable timber within Land Use Designations (LUD's) determined to be appropriate for harvest under the TLMP (1979, as amended). Available information indicates that the amount of timber harvest being considered for this project would be consistent with TLMP standards, guidelines (TLMP 1979, as amended, and TLMP Draft Revision 1991a), and other requirements for resource protection.
- Other areas inside the PSA have been scheduled for harvest during the remainder of the KPC contract term (by 2004) in order to meet contract volume requirements. The effects of harvesting Lab Bay or another offering within the PSA are expected to be of a similar magnitude, particularly to subsistence users. The order in which sales are offered will affect different communities at different times; however, the sequence of harvest would have limited overall effects on subsistence resources. Harvest of these other areas is foreseeable, in any case, over the forest planning horizon under either the existing TLMP or the TLMP Draft Revision.
- It is reasonable to schedule harvest in the Lab Bay Project Area now rather than in other areas because an extensive road network is in place; existing KPC logging camps can handle the timber volume; and the NEPA process can be completed in time to make timber available to meet contract requirements. Other areas being considered for harvest in the near future are the subject of other EIS's that are ongoing or scheduled to begin soon. Providing substantially more timber volume from other areas in order to avoid harvest in the Lab Bay Project Area or other project areas likely would not meet contract requirements and would not fully implement the TLMP.

Existing and Desired Future Condition

The current Forest Plan (TLMP 1979, as amended) defines a desired future condition through the Management Direction/Emphasis for each Management Area. This direction includes goals for timber, recreation, visuals, fish, wildlife and other resources in each area. More than half of the Forest is anticipated to remain in a basically unmodified condition over time under the Forest Plan. The Plan projected that timber-related employment would remain stable if the more marginal timber could be harvested. Specific Management Direction/Emphasis for each Management Area in the Lab Bay Project Area is provided in TLMP 1979, as amended in 1985-86 (TLMP 1986a).

The Management Direction/Emphasis was further refined as the desired future condition for each LUD in the TLMP Draft Revision (1991a). The desired future condition consists of a mosaic of timber stands of varying sizes and ages, interspersed with areas of old growth and nonforest vegetation, furnishing a sustained yield of timber in balance with other resources and uses. Roads will be provided to suitable timber lands allowing the conversion of old growth timber to successive stands of younger trees. Riparian areas and water quality will be managed to benefit dependent resources; fish habitat will be maintained or improved. Sensitive visual resources, particularly as viewed from salt water, will be conserved. Overall, the forest will be highly modified through timber harvest and other human activities over the planning horizon of 150 years (TLMP Draft Revision 1991a).

Achievement of the desired future condition will require many decades of forest management. Land use designations (LUD's) are ways of managing an area of land and the resources it contains. LUD's may emphasize certain resources (such as wilderness or old-growth wildlife habi-

tat), or combinations of resources (such as maintaining scenic quality in combination with timber harvesting). Each land use designation has a detailed management prescription, which includes practices and standards and guidelines.

Decision to be Made

Based on the information in this EIS, the Forest Supervisor will decide whether and when to make timber available for harvest and how much to make available. Other decisions include the location and design of harvest units, access management plans, mitigation measures, and construction of a tie road between Calder Bay and Labouchere Bay. The Forest Supervisor can decide to (1) select one of the alternatives presented in the Final EIS; (2) modify an alternative as long as the environmental consequences of that action have been fully analyzed in the Final EIS; or (3) reject all alternatives and request further analysis. If an alternative is selected, it will be documented in the Record of Decision (ROD).

Issues Addressed in this EIS

Analysis of the proposed land use action in the Lab Bay Project Area has been built upon a number of issues identified during scoping consultation with members of the public, government agencies and Forest Service. Each issue was analyzed by the ID Team to determine the effect the proposed action would have on the overall management and environment of the Lab Bay Project Area as well as any direct and indirect effects on resource values and uses. This process focused the analysis on eight broad issue areas determined to be significant and within the scope of this EIS. Alternative frameworks were then constructed around these issues, and the environmental consequences of the alternatives were analyzed.

Issue 1: How will the harvest of 85 million board feet of timber from the Lab Bay Project Area affect the future supply and availability of timber?

The public expressed concern about the amount of timber available and proposed for harvest. Some commentors would prefer to see all merchantable timber harvested in a short time period, while others prefer a reduced level of harvest. This issue also includes the public concern about the types of harvest methods being used and the balance between timber harvest and other forest uses. Compliance with TTRA's proportional harvest requirement was also sought by individuals.

Issue 2: How would timber harvest affect subsistence resources and use within the Project Area?

For many area residents, subsistence hunting, trapping, fishing and gathering natural resources provides needed food. For others, especially Southeast Alaska's Native Americans, subsistence is a life-style that preserves traditional customs and values. The effects of harvesting timber and constructing roads is a concern to subsistence users whose traditional hunting, trapping and gathering areas may be changed by this action. Increased access and habitat fragmentation could reduce the habitat capability of the Project Area and could disperse the animals from traditionally used areas, altering subsistence opportunities. Increased competition from non-subsistence users is a directly related concern. Conversely, some subsistence users benefit from the improved access that new or improved roads provide.

Issue 3: What effects would timber harvest and related activities have on wildlife habitat and biological diversity?

The Project Area supports a wide variety of wildlife species. The habitat requirements of many of these species are associated with mature forest stands and must be integrated with timber harvest planning. Consideration must be given to the fragmentation of large blocks of old growth, to biological diversity, and to species dependent upon this habitat. Miles of open road within the Project Area also affect wildlife species, particularly when habitat becomes more fragmented. This action is proposed within the possible ranges of several threatened, endangered or sensitive species. Commentors expressed a desire to see timber harvest managed in such a way as to protect these species and their recovery plans. Some specific concerns expressed included maintenance of previously mapped old-growth retention and extended rotation

areas; and adherence to TTRA's requirement to harvest proportional amounts of low volume and high volume timber stands.

Issue 4: What effects would timber harvest and road construction have on fish habitat and water quality?

Streams and the adjacent habitat provide important spawning, rearing and shelter areas for both resident and anadromous fish. Marine waters support shellfish and saltwater species of fish. Some commentors stated that these resources should be protected, in particular in the erosion-prone Salmon Bay Lake watershed. Other areas of concern are the watersheds surrounding the communities/logging camps of Port Protection and Labouchere Bay, in particular those watersheds that supply community drinking water. Concern was also expressed for watersheds providing water supply to private residences and the Whales Resort. Interest was expressed in managing timber harvest and road construction to protect water quality and to sustain fish populations for subsistence, commercial and sport users.

Issue 5: What effects would timber harvest and related activities have on recreationalists in or near the Project Area?

Remoteness and solitude are two of the characteristics that make the Lab Bay Project Area attractive to both residents and visitors. In contrast, the extensive road network makes Prince of Wales Island more accessible than any other island in Southeast Alaska. The Project Area offers recreation values and opportunities which include hunting, fishing, hiking and caving. Tourism is increasing, with visitors attracted by both the natural setting and its accessibility. Existing recreation developments within the Project Area include cabins at Red Lake and Salmon Bay Lake, a campground at Exchange Cove, and a picnic site at Memorial Beach. The Mt. Calder / Mt. Holbrook and Salmon Bay Lake LUD II's provide primitive recreation opportunities. How existing recreation uses and future recreation opportunities will be balanced with timber harvest was the subject of several comments.

Issue 6: To what extent would timber harvest influence the character of the landscape and how would timber harvest be designed to protect visual quality?

The Project Area can be seen from several recreation areas and marine travel routes. The scenic forested hills and beaches provide an outstanding natural setting for both tourists and residents. Tourism is helping to diversify the regional economy, so maintaining the scenic quality of the landscape is an important regional concern. Preserving certain scenic views is recognized as an important factor in designing a timber harvest. Commentors recommended protection of views in the area of Port Protection, Point Baker, Whale Pass, Thorne Island, Salmon Bay Lake, Red Bay and Red Bay Lake.

Issue 7: What effects would timber harvest and road construction have on local communities and residents?

The regional economy is highly dependent upon the land and its natural resources. Because of this dependency, forest management is closely tied to the issue of social and economic development and structure at the regional and community level. Both the short and long-term costs and benefits of timber-related activities must be factored into an analysis of community stability, lifestyle and employment opportunities. There is disagreement among individuals and groups about the relative importance of the timber industry; some feel that the economic and social welfare is dependent on the timber, while others feel that recreation, tourism and fisheries should be emphasized.

Issue 8: How would timber harvest affect the karst resources found in the Lab Bay Project Area?

Significant caves require protection under the Federal Cave Resource Protection Act of 1988. Important and extensive cave systems and other significant features of karst have been identified throughout much of the Project Area. The term "karst" refers to a distinctive three-dimensional landform and drainage system in highly soluble bedrock, such as limestone. The caves and

karstlands in the Project Area form a complex ecosystem involving hydrology, productive fisheries, high wildlife values, and high timber productivity. The cave systems are also known to shelter important cultural and paleontological resources. Within the Project Area, four areas known to contain a high density of caves have been proposed as Special Interest Areas under the TLMP Draft Revision (1991a). Commercial timber harvest would be prohibited in these areas. Many other caves and significant features of karst exist in other locations within the Project Area. Commentors expressed concern with nearly every aspect of the karst ecosystem, including desiring more protection of caves and cave resources, effects of harvest on the quality of domestic water supplies, impacts of harvest on the complex ecological relationships, and exploration of recreational opportunities.

Development of Alternatives

Each action alternative presented in this EIS is a different approach to meeting the purpose and need for action while addressing the issues identified on the previous pages. Five action alternatives were developed after extensive data analysis and field verification by the Interdisciplinary Team (ID Team) of resource specialists. The process used to develop the alternatives included the following steps:

1. Identification of the key issues.
2. Development of a set of preliminary alternative frameworks, based on and responsive to, these issues and the purpose and need for action.
3. Development of a preliminary Logging System and Transportation Analysis (LSTA) and a preliminary pool of potential harvest units, along with associated roads which meet Forest Plan Standards and Guidelines (TLMP Draft Revision 1991a), through use of maps, 1991 aerial photographs and available GIS data.
4. Field verification of the suitability of timber, logging feasibility and associated resource constraints and opportunities for each potential harvest unit and proposed road.
5. Analysis of unit-specific field data and revision of the unit pool and alternatives to better address the project issues and concerns and to meet Forest Plan objectives.



6. Development of a preliminary set of reasonable alternatives, assigning harvest units to the appropriate alternative framework.
7. Finalizing of the unit pool and alternatives to respond to current Forest-wide management direction.

Unit Pool and Alternative Refinement

The preliminary alternatives were reviewed by Forest Service technical and management staff. The unit pool, unit design and preliminary alternatives were revised in response to five primary factors, as described below.

Purpose and Need Target Volume

Alternatives were revised to meet as closely as possible the 85 MMBF target volume specified by the purpose and need.

TTRA Proportionality Requirement

The unit pool and action alternatives were revised to comply with the TTRA proportional harvest goals for Management Areas K01, K02 and K03. As a result of these recalculations, 27 units, totalling approximately 1,070 acres, were deferred from the unit pool.

Karst Resources

Karst resources on Prince of Wales Island and the Lab Bay Project Area received increasing attention after completion of the field inventory. Additional field studies were undertaken to more fully assess the extent and the vulnerability of karst resources to harvest activities. In response to the public and scientific interest in karst resources, Phase 1 and 2 karst vulnerability assessments were conducted on the Project Area during 1994. As a result, an action alternative was designed to avoid harvest on high vulnerability karst areas.

Ecosystem Management

Ecosystem management has become an important planning tool for the National Forests. The Lab Bay Project Area was divided into six geographic areas (landscape management zones) that encompass special functions and values for one or more key resources. In addition, nine harvest types, ranging from clearcut to single tree selection, were developed to address standards and guidelines for visual quality, water quality, fisheries, karst resources, and snag and green tree retention. Selection of a treatment was based on site-specific information, LUD, and landscape management zones. (See Appendix D for detailed descriptions of harvest types.)

Habitat Conservation Strategies

In response to increasing interest in conservation biology on the Tongass National Forest, several habitat conservation strategies were incorporated into the action alternatives. Two strategies relying upon Habitat Conservation Areas (HCA's) were evaluated in Alternatives 3 and 4. Other conservation strategies not utilizing HCA's are incorporated in Alternatives 2 and 5.

Unit Pool Refinement

Table 1 summarizes adjustments made to the unit pool during preliminary planning activities, field verification, and analysis phases. Dropped units are those located on unsuitable lands, and are recommended for removal from the suitable timber base. Deferred units are those which either require field verification regarding suitability, or have been field verified as suitable but unavailable for harvest at this time due to various Standards and Guidelines. The table indicates the primary reason for dropping or deferring a unit; in many cases additional resource concerns contributed to the decision. As shown on the table, the primary reasons for deferral of harvest were proportionality (27 units), adjacency (14 units), logging feasibility/cost (10 units), and cumulative visuals and watershed concerns (5 units each). Units were dropped (as opposed to deferred) primarily due to stream (TTRA) and estuary buffer requirements (9 units).

Table 1

Number of Units Deferred From Analysis During Paper Plan Development and Initial Field Evaluations

	Logging Feasibility / Cost	Stream & Estuary Buffer	Adjacency Requirement	89-94 Contingency Unit	Visual Quality	High Hazard Soils	State Selection (Proposed)	Cumulative Watershed	Silvicultural Limits	Proportionality
Total	10	9	14	1	5	1	2	5	1	27

Note: Some units may have multiple reasons for being dropped/deferred. These are presented in Appendix B.

Final Unit Pool and Alternatives

The current Lab Bay unit pool is comprised of 125 field-verified harvest units on approximately 4,550 acres. Approximately 80 miles of new road would be required to access the units; 24 units are designed for harvest by helicopter. Harvest of the unit pool would result in approximately 102 MMBF of timber volume. Alternative 2 encompasses the full unit pool. Other action alternatives are subsets of the pool.

Alternatives Considered but Eliminated from Detailed Analysis

Two alternatives were examined, but not considered for detailed study in this EIS. This section presents those alternatives and the rationale for not considering them further.

Preliminary Alternative B

Preliminary Alternative B was designed to harvest the maximum volume the Project Area can provide at this time. It included 181 harvest units and would provide approximately 180 MMBF of timber. It was not considered in detail because it harvested a disproportionate amount of Volume Class 6 and 7 timber in Management Areas K02 and K03 and would not be in compliance with the TTRA proportionality requirement. Final Alternative 2, the unit pool, is based on Alternative B with high volume class units in MA's K02 and K03 deferred from harvest at this time.

Preliminary Alternative D

Preliminary Alternative D, which emphasized timber-related economic benefits, did not meet mandated proportionality requirements and, in addition, did not show a clear economic superiority over other alternatives. This alternative was dropped from further consideration.

Alternatives Considered in Detail

Five alternatives, including one no-action alternative are considered in detail (Figures 2 through 6). The effects of each alternative upon eight key issues identified during public scoping are described in the following pages. Table 2 summarizes the consequences of the alternatives.

Alternative 1 represents the existing condition of the Project Area and its adoption would not implement any of the actions described in this document. This is the "no action" alternative against which all others are compared.

Alternatives 2, 3, 4 and 5 represent different means of achieving the project purpose and need by harvesting approximately 85 MMBF of timber while responding to the public issues with differing emphasis.

Alternative 1 (No Action)

Framework

Alternative 1 proposes no new timber harvest, road construction or road closures in the Project Area. This alternative is the baseline against which the effects of all other alternatives are measured.

Resource Outputs

There are no new resource outputs associated with this alternative. Timber harvest and road building would not occur within the Project Area. Additional receipts to the State of Alaska would be foregone, existing jobs would not be sustained, and no new jobs would be created.

Alternative 2

Framework

Alternative 2 includes all proposed units that are feasible to harvest at this time under federal and state laws and forest-wide standards and guidelines.

Resource Outputs

Implementation of Alternative 2 would result in the harvest of approximately 102 MMBF of timber from 125 harvest units. This volume would be harvested from approximately 4,550 acres and includes 12 MMBF of timber from the clearing for approximately 80 miles of new road. One new LTF would be constructed for the proposed harvest on Thorne Island. Payments to the State of Alaska are estimated at 1.5 million dollars and approximately 158 direct jobs would be created over a 3 year time period.

Alternative 3

Framework

The framework for Alternative 3 (Modified Proposed Action) emphasizes the protection of high vulnerability karst resources and Habitat Conservation Areas (HCA's) as defined in the 1994 Draft Interim Habitat Management Guidelines EA (hereafter referred to as Draft Interim-designated HCA's). Under this alternative, no harvest is proposed on high vulnerability karst areas, as mapped in the 1994 Karst Vulnerability Assessment Report. In addition, no harvest would occur within the Draft Interim-designated HCA's.

Resource Outputs

Implementation of Alternative 3 would result in the harvest of approximately 66 MMBF of timber from 83 harvest units. This volume would be harvested from approximately 3,050 acres and includes 8 MMBF of timber from the clearing for approximately 55 miles of new roads. One new LTF would be constructed for the proposed harvest of Thorne Island. Payments to the State of Alaska are estimated at 1.0 million dollars and approximately 102 direct jobs would be created over a 3-year period.

Alternative 4

Framework

The framework for Alternative 4 is based on harvesting timber while protecting blocks of wild-life habitat and travel corridors. No harvest is proposed within the Lab Bay Project-defined HCA's. These HCA's were designed based on Project-specific habitat information. Timber harvest would be allowed within proposed wildlife corridors and managed on a 195-year rotation. Within Project-defined HCA's, 2.4 miles of new road would be constructed. An additional 4.5 miles would be constructed within Project-defined corridors. All new roads within HCA's and corridors are proposed for closure after completion of harvest. Under this alternative, timber harvest on Thorne Island will be conducted according to an uneven-aged management plan using helicopter yarding methods. No LTF or roads would be constructed on Thorne Island under this alternative.

Resource Outputs

Implementation of Alternative 4 would result in the harvest of approximately 64 MMBF of timber from 78 conventional harvest units and one uneven-aged management unit. This volume would be harvested from approximately 3,100 acres and includes 7 MMBF of timber from the clearing of approximately 50 miles of new roads. Payments to the State of Alaska are estimated at 0.9 million dollars and approximately 98 direct jobs would be created over a 3-year period.

Alternative 5

Framework

This alternative is designed to harvest groups of units that fall within common geographical areas. Units were selected with consideration for cost-effectiveness of road construction as well as haul distance.

Resource Outputs

Implementation of Alternative 5 would result in the harvest of approximately 70 MMBF of timber from 85 units. This volume would be harvested from approximately 3,100 acres and includes 9 MMBF of timber from the clearing for approximately 60 miles of new roads. One new LTF would be constructed for the proposed harvest on Thorne Island. Payments to the State of Alaska are estimated at 1.0 million dollars and approximately 108 direct jobs would be created over a 3-year time period.

Comparison and Evaluation of Alternatives

This section describes the environmental consequences of each alternative in a comparative format. Table 2 summarizes the environmental consequences of the alternatives. All numbers presented are either absolute or relative to Alternative 1, No Action. Finally, the alternatives are compared and evaluated relative to the significant issues identified earlier in this summary. For more detailed descriptions of the affected environment and the environmental consequences of the alternatives, refer to Chapter 3 of the complete Draft EIS.

Issue 1: Timber Supply

All action alternatives would provide a supply of timber to help meet the KPC Long-term Contract requirements. Alternative 2 would provide approximately 102 MMBF, while Alternatives 3, 4 and 5 would provide 66, 64, and 70 MMBF of timber respectively.

The current timber supply can support the projected harvest in the Lab Bay Project Area through 2054 only if falldown and changes in land use are considerably less than estimated using currently available data and assumptions.

Selection of the No Action Alternative would result in all three Management Areas remaining out of compliance with proportionality requirements. Alternative 4 would result in the greatest improvement in the proportion of high volume remaining in the Project Area after harvest.

Alternatives 2, 3, and 5 would harvest 619 acres on Thorne Island using conventional methods supported by 15.5 miles of new road and one LTF. Alternative 4 would have the least impact on Thorne Island by implementing an uneven-aged management plan. This alternative would harvest approximately 218 acres on Thorne Island, using 2-acre patch cuts harvested by helicopter yarding.



Issue 2: Subsistence

All alternatives could significantly restrict subsistence use of deer and black bear, because of existing conditions and projected cumulative effects. These effects would be felt by the communities of Coffman Cove, Craig, Klawock, Naukati, Point Baker, Port Protection, Whale Pass, and Wrangell. For reasons developed in this EIS, Point Baker, Port Protection, and Whale Pass are the communities potentially most affected and the alternatives are compared primarily in terms of effects upon these communities.

Two "severable" elements of specific alternatives are assessed separately. The Calder Tie Road would increase access within WAA 1527, potentially affecting the harvest of deer and black bear in that area. This could pose a potential restriction to Point Baker and Port Protection hunters in terms of both abundance and distribution of, as well as competition for these animals. Subsistence hunters from other communities may benefit from increased access to this area, but the potential restriction may be of greater significance. Thorne Island is included as a timber harvest area in all alternatives, either with a conventional roaded harvest or an uneven-aged management plan with no roads and helicopter logging. The conventional harvest method has greater potential to restrict subsistence use than the uneven-aged management plan. Under the uneven-aged plan, the potential effects may be confined to the time when timber harvest is actually conducted, thus affecting access for a relatively short time and probably not affecting abundance and distribution to any great degree. The conventional harvest plan could affect both abundance and distribution, as well as access, for a much longer period of time. Thus, Alternative 4, which includes the Thorne Island uneven-aged management plan, has fewer potential restrictive effects upon subsistence resource use.

Alternative 3 presents the least possibility to significantly restrict subsistence uses, while Alternative 2 presents the greatest. In order of increasing level of potential effects, the alternatives can be ranked 3, 5, 4, and 2. The No-Action Alternative has the fewest potential effects.

Issue 3: Wildlife and Biodiversity

The major effects on wildlife habitats in all action alternatives are the reduction of old-growth forest habitat (Volume Classes 4 through 7) and increased access by the construction or reconstruction of roads into presently unroaded areas.

Alternative 2 would result in the greatest effect on old-growth habitat and effects due to increased roading, while Alternative 4 would result in the least effect among the action alternatives. All alternatives would result in impacts consistent with the implementation of TLMP (1979, as amended) and Alternative P of the TLMP Draft Revision (1991a).

All action alternatives would reduce the frequency and size of large, unfragmented old-growth patches (Table 2). High-value, relatively unfragmented blocks of old-growth habitat were identified in the vicinity of Mt. Calder/Mt. Holbrook LUD II, Baker Creek, Calder Bay, Perue Peak, Red Lake, Red Bay, and Salmon Bay Lake. Alternatives 2 and 5 enter all of these areas (with the exception of the LUD II), Alternative 3 enters all but the Calder Bay block, and Alternative 4 avoids all of the identified blocks.

Four different conservation biology strategies are incorporated into the action alternatives and represent varying levels of risk over the long term. By year 2054, implementation of either the draft karst or Project-defined HCA strategy will have maintained the largest areas of contiguous old-growth habitat and travel corridors distributed throughout the Lab Bay Project Area. In addition, the Project-defined HCA strategy would provide a future wildlife travel link between the Lab Bay and CPOW Project Areas. Implementation of TLMP (1979), the proposed LUD system (TLMP Draft Revision 1991a), or the Interim HCA strategy would result in a smaller number of large old-growth areas distributed across the Project Area by the year 2054. East-west travel corridors or the future habitat connecting between the Lab Bay and CPOW Project Areas would not be maintained.

Alternative 4 would cause the least impact to Thorne Island by implementing an uneven-aged management plan that would harvest approximately 218 acres, using two-acre patch cuts and access by helicopter. No roads would be built on Thorne Island under this alternative. Alternatives 2, 3, and 5 would harvest 619 acres on Thorne Island using conventional methods and build 15.5 miles of road. Under Alternatives 2, 3, and 5, a new LTF would be built on Thorne Island, resulting in additional habitat and disturbance effects for those species utilizing the waters near the site and those that use beach fringe habitat.

MIS habitat capability would be reduced under the action alternatives by 0 to 6 percent depending on the species and alternative (Table 2). Threatened or endangered species would not be affected.

Issue 4: Fish Habitat and Water Quality

The primary effect of the action alternatives on fish habitat and water quality would be increased erosion and sedimentation due to timber harvest and road construction. However, best management practices designed to minimize delivery of sediment to stream channels will be implemented under all action alternatives.

Alternative 2 involves construction of 26 miles of road and harvest of 1,781 acres on slopes with high potential for delivering sediment to a Class I stream. The other action alternatives involve 17-18 miles of road construction and 1,000 (Alternative 4) to 1,200 (Alternatives 3 and 5) acres of timber harvest on such slopes. Most of the roads and harvest units with the greatest risk are located in the Alder, Big, Buster and Calder Creek watersheds.

All action alternatives would increase the number of stream crossings through construction of new roads. Alternative 2 would require the largest number of new crossings of Class I and II streams (34). Alternative 5 would require 26, Alternative 3 would require 20, and Alternative 4 would require the fewest, at 16. Alternative 4 is the lowest due to implementation of the uneven-aged management plan on Thorne Island, eliminating the need for road construction there.

Increased access to watersheds supplying domestic water users increases the potential for bacterial contamination of water supplies. Under Alternatives 2 and 5 there would be a temporary increase in access to the Spring and Cove Creek watersheds serving Port Protection. Geotechnical investigations would be required prior to road construction due to the karst topography and intricate subsurface drainage patterns. Alternatives 2, 3, and 4 involve 0.3 miles of new road access and 11 acres of timber harvest in a small watershed serving Whales Resort and 3 families. All of these roads would be closed immediately following timber removal.

None of the alternatives include harvest units in a watershed where more than 35 percent of the area has been harvested in the 15 years prior to 1994.

Under all action alternatives, standards and guidelines for protection of fisheries resources are recommended; however, each has the potential to cause exceedance of HGC buffer cumulative harvest guidelines. Alternatives 2 and 5 would exceed the threshold in 4 watersheds, Alternative 3 would exceed the threshold in 3 watersheds, and Alternative 4 would exceed the threshold in one watershed. No harvest buffers would be used on high gradient contained Class III streams within harvest units to avoid exceedance of HGC cumulative harvest guidelines.

Issue 5: Recreation

The proposed action alternatives would not change recreation settings and activities for the majority of the 48 inventoried Recreation Places. The largest changes would occur in the interior areas around Calder Mountain, Red Lake and on Thorne Island. All action alternatives would affect the interior of Calder Bay, and the "Perue" Peak/Lake Recreation Place would shift to a more roaded setting. Units proposed in Alternatives 2, 3, and 5 would cause Semi-Primitive Non-Motorized ROS settings west and southeast of Red Lake to shift to Roaded Modified settings. All of Thorne Island would shift from Semi-Primitive Non-Mo-

torized and Semi-Primitive Motorized to the Roaded Modified ROS setting as a result of harvest activity under Alternatives 2, 3, and 5.

Two inventoried roadless areas would be actively harvested as a result of the action alternatives. A number of units would be spread throughout the El Capitan roadless area, resulting in the elimination of the Primitive ROS class setting, changing much of its Semi-Primitive Non-Motorized Setting to a Roaded Modified class. Units within the Salmon Bay roadless area are concentrated north of the Salmon Bay LUD II area and would reduce the Primitive ROS setting in this area. Most of the roadless areas within the Project Area would be altered by harvesting and road construction. Alternatives 2, 3, and 4 would create the most change. Only a small portion of the roadless areas not already set aside in LUD II would remain roadless at the end of the harvest cycle.

Issue 6: Visuals

Action alternatives would harvest varying amounts of timber visible from Priority Travel Routes and Use Areas. Alternatives 2 and 5 would each harvest 33 units visible from eight identified Priority Travel Routes and Use Areas. Fourteen and thirteen of these units would be apparent in more than one viewshed, respectively, if Alternative 2 or 5 were implemented. Alternative 3 would harvest 24 units visible from five Priority Travel Routes and Use Areas. Seven proposed units would be apparent from more than one such area. Unlike alternatives 2 and 5, no proposed harvest would be visible from Port Protection, Exchange Cove, or the West Coast Waterway. Alternative 4 would harvest fifteen units within six Priority Travel Route and Use Area viewsheds, with four units being visible in more than one viewshed. No logging activity would be seen from Red Lake or the West Coast Waterway. Alternative 4 would also harvest 109, two-acre patches on Thorne Island using helicopters and barges. This treatment would result in less visual impact in this portion of the Whale Pass viewshed than would activities proposed by the other action alternatives.

Issue 7: Karst

Alternative 2 would result in the most units, greatest area (1,314 acres), and most miles of road (15) on karstland areas. Of the proposed harvest on karstlands in this alternative, 1,162 acres (88 percent) would occur on high vulnerability karst areas. Thirty-four (34) harvest units contain significant karst features (caves, vertical shafts, insurgences or resurgences, or other features with direct atmospheric or hydrologic connections between the surface and subsurface). Two harvest units are located within known domestic watersheds. Under Alternative 2, harvesting within 28 units could cause irreversible resource damage.

Alternatives 4 and 5, which have distributions of units and areas that are similar with respect to each other, would each result in fewer units, area and miles of road on karstlands than would Alternative 2. Alternative 4 has 19 harvest units that contain significant karst features. Harvesting within 15 units could cause irreversible resource damage. Alternative 5 has 22 units that contain significant karst features, and 2 units that are located within known domestic watersheds. Under this alternative, harvesting within 18 units could cause irreversible resource damage.

Alternative 3, which was formulated to avoid harvest on high vulnerability karst areas, would harvest 23 acres on low or moderate vulnerability karst areas and is not expected to cause irreversible resource damage.

- *Issue 8: Social and Economic Factors*

The No Action alternative would provide no new resource outputs or economic/employment opportunities. The action alternatives would provide employment ranging from an estimated 98 jobs (Alternative 4) to 158 jobs (Alternative 2) over a 3-year period.

Of the action alternatives, Alternative 2 would provide the greatest number of jobs (158), employee compensation (\$9.4 million), and payments to the state (\$1.6 million) while having the lowest break-even pond log value (\$349/MBF) and present net value (-\$15.9 million). Alternatives 3, 4, and 5 provide roughly equal economic benefits. These three

alternatives would create approximately 100 jobs over a 3-year period, \$6 million in employee compensation, and \$1 million in payments to the state. Break-even pond log values are approximately \$400/MBF for Alternatives 3, 4, and 5, yielding a net present value of -\$11 million.

Table 2

Comparison of Environmental Consequences by Alternative

Environmental Consequence		Unit	1	2	Alternative 3	4	5
Harvest Units							
Number of Units	No.	No.	0	125	83	78 ¹	85
Average Size	Acres	Acres	0	36	37	35 ²	37
Number over 100 Acres	No.	No.	0	0	0	0	0
Total Acres	Acres	Acres	0	4,550	3,040	2,919	3,106
Volume							
Total Volume	MBF	MBF	0	102,375	66,244	63,538	69,951
Silviculture/Vegetation							
Proportionality	TTRA Base						
K01	37.26	Percent	37.05	37.12	37.60	37.56	36.99
K02	23.29	Percent	22.31	23.14	22.97	23.14	23.14
K03	18.22	Percent	17.50	18.40	18.09	18.06	18.06
Volume Class Harvested							
VC4		Acres	0	1,494	1,211	1,136	965
VC5		Acres	0	1,928	1,217	1,198	1,315
VC6		Acres	0	552	225	227	469
VC7		Acres	0	220	129	97	89
Silvicultural System (Harvest Type)³							
Clearcut							
Type A		Acres	0	417	359	274	302
Type B		Acres	0	1,225	953	787	736
Type C		Acres	0	179	119	360 ⁴	93
Type D		Acres	0	1,680	1,048	911	1,279
Overstory Removal		Acres	0	202	111	148	202
Seed Tree		Acres	0	205	188	205	154
Shelterwood (light)		Acres	0	169	169	80	98
Shelterwood (heavy)		Acres	0	23	0	2	23
Single Tree/Group Selection		Acres	0	449	92	151	221
Karst							
Total Karstlands in Each Alternative	Acres	Acres	0	1,314	23	711	791
Harvest Units with High Vulnerability	No.	No.	0	35	0	20	22
Areas of High Karst Vulnerability	Acres	Acres	0	1,162	0	585	678
Units in Karst Areas within Known Domestic Watershed	No.	No.	0	2	0	1	2
Units with Significant Karst Features	No.	No.	0	34	0	19	22

Summary

Table 2 (Continued)

Comparison of Environmental Consequences by Alternative

Environmental Consequence	Unit	Alternative				
		1	2	3	4	5
Roads on Karst	Miles	0	15	1	10	9
Wetlands						
Percent of Wetland Acreage Affected	Percent	0	4	3	3	2
Wildlife Habitats						
Acres of Habitats Affected						
Old-growth Forest	Acres	0	4,427	2,943	2,802	3,010
Riparian	Acres	0	489	322	316	321
Beach Fringe and Estuary	Acres	0	7	4	40	6
Wildlife Habitat Capability						
Percent Reduction of Habitat Capability						
Sitka Black-tailed Deer	Percent	0	2.1	1.5	1.2	1.3
Black Bear	Percent	0	0	0	0	0
Gray Wolf	Percent	0	2.0	1.3	1.3	1.3
Marten	Percent	0	4.1	2.9	2.5	2.9
River Otter	Percent	0	0	0	0	0
Bald Eagle	Percent	0	0	0	0	0
Vancouver Canada Goose	Percent	0	3.6	2.5	2.2	2.5
Red-breasted Sapsucker	Percent	0	5.7	4.0	3.5	3.8
Hairy Woodpecker	Percent	0	6.0	3.9	3.0	3.8
Brown Creeper	Percent	0	4.2	2.1	1.9	3.0
Biodiversity						
Unfragmented Interior Old-growth Patches Remaining						
1,000-10,000 Acres	No.	3	3	3	3	3
500-1,000 Acres	No.	6	4	5	4	4
100-500 Acres	No.	25	24	24	25	25
Habitat Conservation Areas						
Draft Interim-designated HCA's						
Proposed Harvest Units	No.	0	5	0	5	2
Proposed Acres of Harvest	Acres	0	193	0	193	124
Project-defined HCA's						
Proposed Harvest Units	No.	0	26	13	0	22
Proposed Acres of Harvest	Acres	0	1,123	609	0	774
Project-defined Corridors						
Proposed Harvest Units	No.	0	12	7	3	8
Proposed Acres of Harvest	Acres	0	482	253	80	336
Watershed and Fish						
Harvest Unit Acres with High Potential for Sediment Delivery to a Class I Stream	Acres	0	1,781	1,216	988	1,285

Table 2 (Continued)

Comparison of Environmental Consequences by Alternative

Environmental Consequence	Unit	Alternative				
		1	2	3	4	5
Road Miles with High Potential for Sediment Delivery to a Class I Stream	Miles	0	26	17	17	18
Number of Domestic Supply Watersheds Potentially Affected	No.	0	3	1	1	2
Number Watersheds Potentially Exceeding HGC Threshold Due to Proposed Harvest	No.	0	4	3	1	4
Number of Class I and II Stream Crossings	No.	0	34	20	16	26
Log Transfer Facilities						
Marine Habitat Affected by Bark Deposition	Acres	0	7.8	7.8	5.9	7.8
Recreation (Percent change)						
Primitive	Percent	0	-100	-100	-48	-100
Rural	Percent	0	-3	0	0	-3
Roaded Modified	Percent	0	40	38	37	36
Roaded Natural	Percent	0	-10	-7	-1	-6
Semi-Primitive Motorized	Percent	0	-34	-29	-20	-33
Semi-Primitive Nonmotorized	Percent	0	-39	-38	-44	-33
Visual Quality						
Impact to Priority Travel Route and Use Area Viewsheds	No. Units Visible	0	33	17	15	33
Cultural Resources						
Potential for Impacts to Known Cultural Resources	No. Units	0	1	1	0	1
Socio-economics						
Employment (Year 3)	No. Jobs	0	158	102	98	108
Employee Compensation (Year 3)	Thousands \$	0	\$9,426	\$6,099	\$5,850	\$6,440
Payments to State	Thousands \$	0	\$1,560	\$1,009	\$968	\$1,066
Break-even Pond Log Value	\$/MBF	0	\$349	\$399	\$410	\$404
Present Net Value	Millions \$	0	-\$15.9	-\$10.5	-\$10.8	-\$11.5
Subsistence						
Communities Significantly Restricted in Subsistence Use	No.	0	8	8	8	8
WAA's 1527, 1528, 1529, 1530						
Deer Pop. Needed to Support Current Deer Harvest	No.	1,716	1,697	1,696	1,696	1,700
Deer Habitat Capability Req'd to Support Aver. Documented Deer Harvest	No.	350	350	350	350	350
Difference	No.	1,366	1,347	1,346	1,346	1,350
Transportation System						
Number of New LTFs		0	1	1	0	1

Summary

Table 2 (Continued)

Comparison of Environmental Consequences by Alternative

Environmental Consequence	Unit	Alternative				
		1	2	3	4	5
Miles of New Road	Miles	0	77.9	54.7	47.3	57.1
Miles of New Road Proposed for Closure	Miles	0	74.5	52.2	44.4	53.8
Miles Existing Road Proposed for Closure	Miles	0	54.3	54.3	54.3	54.3
Number of Stream Crossings w/Timing Restrictions	No.	0	28	12	17	20
Acres of Road Clearing	Acres	0	708	497	430	519
Logging Systems						
High Lead	Acres	0	172	142	172	92
Live Skyline	Acres	0	592	497	417	476
Shovel	Acres	0	0	0	0	0
Running Skyline	Acres	0	2,405	1,661	1,248	1,806
Helicopter	Acres	0	811	405	728	467
Slackline	Acres	0	569	335	354	265
Calder Tie Road						
Miles of Construction	Miles	0	0.8	0.8	1.2	0.8
Construction Cost	Millions \$	0	\$128	\$128	\$189	\$128
Thorne Island						
Acres Harvested	Acres	0	619	619	218	619
Volume Harvested	MBF	0	8,961	8,961	3,922	8,961
Miles of Road	Miles	0	15.5	15.5	0	15.5
LTF Construction	No.	0	1	1	0	1
Cost per Thousand Board Feet	\$/MBF	0	\$427	\$427	\$380	\$427

¹ This alternative includes the harvest of 109 2-acre patches on Thorne Island.

² Average unit size, excluding the 109 2-acre patch cuts on Thorne Island.

³ Descriptions of the individual harvest types can be found in Appendix O.

⁴ Includes 218 acres of individual patch cuts on Thorne Island as part of the uneven-aged management plan.

Effects of the Calder Tie Road

Development of a tie road connecting the Road 29 near Labouchere Bay with Road 29 near Calder Bay was identified as an important issue during public scoping. Not only would it shorten the travel time between these points from approximately 2.5 hours to one hour, but it would enable heavy equipment to be transported by road to the Calder Bay area. Construction of this road is an option that may be incorporated into any of the action alternatives. Its length would vary by alternative, depending upon access required to reach the array of selected units. Under Alternatives 2, 3 and 5, the road would be 0.8 miles long, and under Alternative 4, it would be 1.2 miles long. If constructed, approximately 1/8 mile of the road would cross an area mapped as high vulnerability karst. In compliance with the Federal Cave Resource Protection Act (1988), the road should be routed to avoid crossing, filling or routing drainage into karst features.

Construction of the tie road would remove approximately 145 thousand board feet of timber under Alternatives 2, 3, and 5, and 218 thousand board feet of timber under Alternative 4. The

road would require the permanent removal of 7.3 acres (Alternatives 2, 3, and 5) to 10.9 acres (Alternative 4) of forested vegetation from the right-of-way. The road segment would not require any new crossings of Class I or II streams. The proposed right-of-way is in an area determined to have a low probability to contain cultural resources and is unseen from Visual Priority Travel Routes and Use Areas. Construction of the tie road would increase access to Recreation Places in the vicinity of Calder Bay but would not change the ROS class or directly affect any recreation places.

Another direct effect of tie road construction would be the reduction of old-growth habitat within the South Perue old-growth block. Open road densities and subsequent human access would increase, adversely affecting wildlife species sensitive to open roads, including deer, black bear, wolf and Vancouver Canada geese. Improved access could have significant effects on subsistence use in WAA 1527, and specifically to the Point Baker and Port Protection areas. Hunting pressure would increase, elevating harvest levels close to or beyond that supportable by local habitat capability.

Effects of Harvest on Thorne Island

Thorne Island presently is unroaded and only about 25 acres have been logged. Timber harvest on Thorne Island has been included as a component of each action alternative. Two different harvest approaches were analyzed: conventional harvest and an uneven-aged management plan. While a harvest method was assigned to each alternative, either approach could be applied to any of the alternatives.

The conventional harvest plan, incorporated into Alternatives 2, 3 and 5, would harvest 619 acres and would require the construction of 15.5 miles of road and one LTF. Silvicultural systems to be used are described in Chapter 3 of the Draft EIS and summarized in Table 3 below. The uneven-aged management plan, included in Alternative 4, would use helicopters to log 218 acres in 2-acre patch cuts distributed across the harvestable area of the island. Helicopter yarding to barges is proposed; thus, no new roads or LTF's would be constructed. Re-entry would be scheduled to occur every 15 years. A detailed description of the uneven-aged management plan, including economic analysis, is provided in Appendix E of the Draft EIS.

A comparison of the two harvest options for Thorne Island is shown in Table 3.

Table 3

Comparison of Thorne Island Management Plans

	Conventional Harvest	Uneven-aged Mgt. Plan
Acres Harvested	619	218
Volume Harvested (mbf)	8,961	3,922
Miles of Road	15.5	0
LTF Construction	1	0
Silvicultural System (Acres)		
Clearcut		
Type A	101	0
Type B	122	0
Type C	0	218
Type D	269	0
Overstory Removal	17	0
Seed Tree	0	0
Shelterwood (light)	89	0
Shelterwood (heavy)	0	0
Single Tree/Group Selection	21	0
Number of Units	18	109
Average Unit Size (acres)	34	2
Largest Unit (acres)	87	2
Smallest Unit (acres)	8	2
Cost per Thousand Board Feet	\$427	\$380

Implementation of the uneven-aged management plan on Thorne Island would reduce the potential for impacts to fisheries resources. By eliminating road construction, seven crossings of Class IIb streams and 26 crossings of Class III streams would not be required. Helicopter logging also would reduce the potential for sedimentation from harvested sites relative to conventional harvest methods. Similarly, the uneven-aged treatment would result in less visual alteration within the Thorne Island portion of the Whale Pass viewshed than would conventional harvest units. The proposed two-acre cuts would be less visible than the large conventional units. While visually disruptive to users of the waterway during periods of intensive harvest, the use of helicopters and barges would also eliminate visual impacts created by logging roads and the log transfer facility.

Subsistence use would be less affected by the uneven-aged harvest approach than by conventional practices. Because no road construction would be required, there would be no increased access effects. The overall effects on subsistence resources would be minimal. Conventional harvest would reduce the deer population over the long term as a result of decreased habitat and increased hunting pressure. Hunting pressure would be expected to occur because road construction would facilitate access to the island interior (via motorcycles or ATV's).

Indirect effects to known cultural resources near the coast of Thorne Island would be minimized under the uneven-aged management plan because neither roads nor an LTF would be constructed.

The conventional harvest approach could potentially affect a National Register-eligible site near the LTF; however, the use of current LTF standards and guides should prevent any direct effect.

The uneven-age management plan would result in lower impacts to all resources during the first entry and subsequent entries while resulting in slightly higher costs per thousand board feet harvested.

Mitigation Measures

The Proposed Revised Forest Plan (TLMP Draft Revision 1991a) presents management prescriptions for each land use designation, provides forest management goals and objectives, and Forest-wide standards and guidelines to be followed for mitigation of land use impacts, but does not contain project decisions. The analysis supporting this EIS discloses possible adverse impacts that are specific to the locality and to the actions proposed. Therefore, specific measures were formulated to mitigate these impacts guided by the proposed land use designation management prescription, and by following Best Management Practices of the Soil and Water Conservation Handbook (1991) and the Forest-wide standards and guidelines.

Most of these measures are harvest unit or road specific, but many of these measures result in the complete elimination or deferral of harvest from geographic areas. These broad measures are identified and discussed first, followed by a summary of the site-specific measures.

Landscape Level Mitigation Measures

Although potentially permitted under proposed Forest Plan standards and guidelines, establishment of harvest units within certain geographic areas were deferred, at least for the current proposed entry. A summary of the areas avoided and the reason for their deferral is provided below:

- 1) Harvest Activities and road building were limited within the proximity of Calder Bay due to past harvest in the area and the cumulative visual disturbance.
- 2) Harvest Activities and road building were limited near Port Protection and Point Baker due to extensive past harvest in the area and resource concerns derived from scoping comments.
- 3) Harvest activities and road building were avoided within the Flicker Creek drainage and limited in the Alder Creek drainage due to the cumulative watershed disturbance and extensive past harvest within the Flicker and Alder Creek Watershed.
- 4) Road building activities were avoided and harvest opening size reduced on Thorne Island for Alternative 4 in order to reduce the multi-resource impacts. Visual and subsistence concerns derived from scoping comments relative to this area were high.
- 5) Visual resources were given special consideration during planning of harvest activities within the Red Bay and Red Bay Lake areas.
- 6) The major project-specific mitigation measures for subsistence have been incorporated into the transportation plan as road closures. Roads have potential direct and indirect effects upon subsistence resource use. They affect the direct abundance and distribution of resources by their construction. The increased access they generally allow also can increase the harvest of subsistence resources. This increased access also has the indirect effect of increasing competition for these subsistence resources.

Site-Specific Mitigation Measures

A wide variety of site-specific mitigation measures have been evaluated and incorporated into harvest unit and road design. These measures are summarized in Table 4 along with the number of harvest units affected for each alternative. A listing of each unit incorporating specific measures is provided in Appendix C of the Draft EIS. A description of the mitigation measures for each unit and road segment is provided in the unit and road design cards in Appendices F and H.

Summary

In addition to the site-specific measures listed in these tables, a variety of other site-specific measures would apply to all harvest and road construction activities and would be incorporated as standard clauses in the specifications of all timber sale and road construction contracts. These measures include all appropriate BMP's not specifically identified in the table. Direction for use of BMP's on National Forest System lands in Alaska is included in Chapter 10 of the Region 10 Soils and Water Conservation Handbook (USDA 1991). The handbook describes the application, monitoring, evaluation, and refinement of these BMP's. In addition, many other Forest Plan standards and guidelines apply, in addition to those cited in the table. These are incorporated by reference (TLMP Draft Revision 1991a).



Table 4

Site-Specific Mitigation Measures Incorporated Into Unit and Road Design

Mitigation Measure	Description	No. of Units Affected in Each Alternative			
		2	3	4	5
Karst					
K1	Geotechnical investigation including dye tracing required to evaluate potential adverse effects on recharge area to domestic water supply.	2	0	0	2
K2	Modify unit boundary to avoid slopes in excess of 70% or to retain areas of greater than 70% on recharge area to domestic water supply.	12	0	5	8
K3	Achieve partial suspension due to steep slopes and/or thin soils on karst.	7	0	4	5
K4	Individual tree selection (Harvest Type I) due to high density of significant karst features (caves, vertical shafts, sinkholes, or insurgences).	12	0	3	9
K5	Avoid yarding over significant features (caves, vertical shafts, sinkholes, or insurgences).	12	1	8	7
K6	Maintain minimum 100 foot windfirm buffers around caves, vertical shafts, and other significant karst features.	34	0	20	21
K7	Directionally fall away from significant karst features (caves, vertical shafts, sinkholes, or insurgences)	17	1	7	12
K8	Ketchikan Area karst resource specialist should review unit during final layout.	36	1	21	23
Roads on Karst					
Kr1	Geotechnical investigation including dye tracing required to evaluate potential adverse effects of road construction on recharge area to domestic water supply.	2	0	0	2
Kr2	Geotechnical investigation required to evaluate potential adverse effects of blasting on significant karst features, or to determine stability of road across karst.	3	0	2	2
Kr3	Avoid filling or channeling of road drainage into caves, vertical shafts, sinkholes, or insurgences.	10	1	8	4
Kr4	Avoid construction over significant karst features (caves, vertical shafts, sinkholes, or insurgences).	12	2	9	8
Kr5	Realign road to avoid significant features (caves, vertical shafts, sinkholes, or insurgences).	3	2	2	2
Kr6	Road eliminated due to karst concerns.	2	1	2	1
Minerals					
M1	Protect all known mineral improvements, such as mine claim markers.	1	1	1	1
M2	Reasonable access will be provided for mining claims.	6	5	6	6
Fish, Water Quality, and Soils					
F1	Modify unit boundaries/design to avoid very high mass movement areas and areas dominated by thin organic soils, or to minimize soil displacement, erosion, and sedimentation into streams. (BMP 13.2, 13.5)	63	40	41	42

Summary

Table 4 (Continued)

Site-Specific Mitigation Measures Incorporated Into Unit and Road Design

Mitigation Measure	Description	No. of Units Affected in Each Alternative			
		2	3	4	5
F2	Avoid road construction in areas of very high mass movement potential (BMP 14.2, 14.7).	2	2	0	1
F3	Require partial to full suspension logging systems to minimize high mass movement potential, and implement measures to minimize soil disturbance, erosion, or sedimentation into streams including seeding, slashing, or other stabilization measures (BMP 12.7, 13.5, 13.7, 13.9, 13.12).	63	43	43	42
F4	Modify logging system to avoid or minimize damage to designated streams, muskegs or other wetlands (BMP 12.5, 13.2, 13.3, and 13.15).	24	15	18	15
F5	Establish no-harvest and selective-cut buffers along streams and around lakes to protect riparian management areas, fisheries, or for protection of temperature sensitive streams (BMP 12.6).	44	31	27	28
F6	Require split yarding and/or directional felling along selected Class III streams without buffers to maintain streambank stability and prevent sedimentation into stream channel (BMP 13.16).	23	19	13	17
F7	Implement measures to reduce surface erosion and drainage interruption related to transportation including water barring and cross-draining roads using ditches and culverts to prevent water running long distances over roads, closure, seeding and fertilizing cut and fill slopes, and locating and designing landings for good drainage and dispersion of water (BMP's 12.7, 12.11, 13.10, 14.3, 14.5, 14.8, 14.9, 14.10, 14.11, 14.12, 14.13)	46	29	35	31
F8	Establish timing restrictions for instream road construction activities for protection of anadromous and resident fish in Class I, Class IIa, and other designated streams. Includes in channel operations, stream crossings on temporary roads, bridge and culvert design and installation. (BMP 14.6, 14.10, 14.14, 14.16, 14.17).	43	24	27	30
F9	Implement BMP's for protection of water quality, riparian areas, and fisheries habitat on all stream crossings including riparian area protection, streambank protection, stream channel protection, road closure, and timely implementation of erosion control measures (BMP 12.6, 12.7, 12.11, 13.16, 14.9, 14.11).	49	28	32	31
F10	Provide no harvest buffers where feasible on HGC streams within and adjacent to units to avoid exceedance of HGC harvest threshold.	11	9	4	10
Vegetation and Timber					
T1	Conduct partial-cut harvesting to provide shelter and retain a seed source in the unit, and/or to help maintain the cedar component in the future stand.	5	5	4	3
T2	Retain at least 2 yellowcedar trees per acre to provide an additional seed source within the unit.	18	18	1	18
T3	Implement measures such as retention areas or partial cutting to reduce regeneration concerns due to high elevation, low site productivity, shallow or saturated soils.	15	5	7	11

Table 4 (Continued)

Site-Specific Mitigation Measures Incorporated Into Unit and Road Design

Mitigation Measure	Description	No. of Units Affected in Each Alternative			
		2	3	4	5
Wildlife					
W1	Provide for greater structural diversity on a stand level by retaining a minimum level of snags and green tree replacements. Typically, the minimum level will be met by retaining trees along unit boundaries and between settings. Identified for third and fourth order watersheds that currently meet or exceed the minimum snag density guidelines, and are not adjacent to extensive past harvest (Concern Level 1).	98	62	58	68
W2	Provide for greater structural diversity on a stand level by retaining a minimum level of snags and merchantable green tree replacements throughout the rotation. Typically, the minimum level will be met by retaining trees along stand edges and between setting boundaries, or within leave tree islands. Identified for third and fourth order watersheds that are at or near the minimum snag density guideline, or are adjacent to extensive past harvest (Concern Level 2).	18	15	12	12
W3	Provide for greater structural diversity on a stand level by retaining a minimum level of snags and merchantable green tree replacements throughout the rotation. Typically, the minimum level will be met by retaining leave tree islands or by partial cut prescription. Identified for third and fourth order watersheds that are currently below the minimum snag density guideline, or are adjacent to extensive past harvest (Concern Level 3).	9	6	9	5
W4	Restrict the timing of helicopter logging and/or helicopter flight paths and road construction blasting near bald eagle nest sites when occupied. During final layout identify those eagle nests that are in close proximity to harvest units and ensure maintenance of buffer zones.	16	10	11	12
W5	Conduct goshawk surveys for harvest units that are within high probability habitat or where past sightings have occurred. Implement Region 10 management guidelines, as appropriate, if nesting is identified.	41	36	24	28
W6	Implement road closures immediately after harvest to minimize human disturbance to wildlife and road access by hunters in specific areas.	104	74	67	70
W7	Evaluate potential for disturbance and restrict harvest and road construction activities in areas and during time periods when Vancouver Canada Goose nesting or trumpeter swan wintering may be disturbed.	18	13	13	9
W8	Consult with District Wildlife Biologist regarding timing of harvest and road construction.	3	3	1	3
W9	Restrict Forest Service authorized boat traffic and aircraft flights in the vicinity of the Stellar sea lion haulout at Kasaan Point on Grindall Island.	*	*	*	*
W10	Restrict Forest Service authorized boat traffic and aircraft flights in the known vicinity of humpback whales and properly dispose of cables from inactive LTF sites.	*	*	*	*
Visual Resources					
V1	Modify unit boundaries to allow harvest unit to meet proposed VQO's.	5	3	2	5

Summary

Table 4 (Continued)

Site-Specific Mitigation Measures Incorporated Into Unit and Road Design

Mitigation Measure	Description	No. of Units Affected in Each Alternative			
		2	3	4	5
V2	Conduct partial cutting of unit to minimize visual contrast with adjacent areas.	6	4	4	5
V3	Leave behind all nonmerchantable trees after clearcutting to minimize visual contrast with adjacent areas.	1	0	2	0
V4	Conduct partial cutting along harvest unit and setting boundaries to reduce visual contrast with adjacent areas.	7	3	4	6
V5	Manage views by maintaining islands or strips of trees to visually screen harvest units from saltwater or roadside where appropriate.	21	11	8	15

Cultural Resources

C1	Provide for mitigation of indirect effects to cultural resource sites near proposed harvest units and roads.	1	1	1	1
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Source:

* Applies to project level implementation



Monitoring

Monitoring activities can be divided into three broad categories: Forest Plan monitoring, routine implementation monitoring, and project-specific monitoring. These broad types are discussed in the following sections. Most monitoring associated with this project would be Forest Plan level monitoring; only activities or effects unique to the Lab Bay Area would be subject to project-specific monitoring.

Monitoring and evaluation provide the Forest officials with information on the progress and results of implementing Forest projects and activities. As such, monitoring and evaluation comprise an essential feedback mechanism to help keep responsive to changing conditions.

Monitoring consists of measuring, on a sample basis, actual activities and their effects. Evaluation compares these results with projections contained in the Forest Plan, the Lab Bay EIS, and with public concerns. Where activities and effects are consistent with expectations and respond to public concerns, these results will be documented and implementation of the project will continue. Where activities and effects are not consistent with expectations, further analysis will be done to identify what corrective action needs to be taken.

Relationship between Project Monitoring and Forest Plan Monitoring

Project-specific monitoring is not intended to replace monitoring requirements developed for the Forest Planning processes. Although there will be overlap between monitoring requirements of projects and the Forest Plan, no single project is expected to address all of the monitoring questions listed in the Forest Plan. On the other hand, some projects may impose monitoring requirements not included in the Forest Plan, in response to site-specific concerns. Taken as a whole, however, monitoring plans for all projects should be designed to answer the questions proposed in the Forest monitoring plan, so that wherever possible, the Forest Plan's monitoring requirements can be met by compiling the results of project monitoring.

Types of Monitoring

There are three distinct types of monitoring: implementation, effectiveness, and validation. Implementation monitoring determines if projects and activities comply with Forest Plan standards and guidelines. Effectiveness monitoring determines whether the standards and guidelines achieve the desired results. Validation monitoring determines whether the assumptions in the Forest Plan regarding the relationship between management actions and their effects are correct, or if there is a better way to depict these relationships.

Project-Specific Monitoring

In addition to the Forest Plan monitoring and routine implementation monitoring that will be conducted throughout the Tongass National Forest, seven Project-specific monitoring activities are identified. Each is unique to the Lab Bay Project Area and normally would not be included in Forest Plan or routine implementation monitoring. The following provides a description for each Project-specific monitoring activity.

Subsistence No. 1

Objective: Maintain sufficient black bear population to support subsistence harvest in WAA 1527.

Desired Result: Maintenance or increase in the population of black bear in WAA 1527.

Measurements: Use wildlife harvest data in conjunction with population estimates and wildlife habitat capability modeling.

Evaluation: Verify that success ratios for subsistence hunters using WAA 1527 are maintained.

Responsible Staff: Thorne Bay District wildlife biologist in coordination with ADF&G biologists.

Record of Results: Report findings to Forest Supervisor.

Subsistence No. 2

Objective: To prevent a significant decrease in the availability of deer for subsistence harvest in WAA 1529.

Desired Result: Maintenance or increase in the population of deer in WAA 1529.

Measurements: Use wildlife harvest data in conjunction with population estimates and wildlife habitat capability modeling.

Evaluation: Verify that success ratios for subsistence hunters using WAA 1529 are maintained.

Responsible Staff: Supervisors Office subsistence specialist in coordination with ADF&G biologists.

Record of Results: Report findings to Forest Supervisor.

Thorne Island Uneven-Aged Management Plan

Objective: To determine if uneven-age management provides the required regeneration success, desired species composition, and meets the required visual quality objectives.

Desired Result: Successful regeneration of desired species and maintenance of existing visual quality objectives.

Measurement: Evaluate harvest units three years after harvest to verify regeneration success and document species composition. Compare before and after visual perspective photos to visual management guidelines.

Evaluation: Determine if regeneration and visual objectives were achieved and can continue to be achieved for future harvest entries.

Responsible Staff: Thorne Bay District silviculturist and landscape architect.

Record of Results: Prepare a brief report of results.

Port Protection and Whales Resort Watersheds

Objective: To prevent significant decrease in water quality for the residents of Port Protection and the Whales Resort area.

Desired Results: No change in water quality during harvest of Units 527-206, 527-226 and 538-210.

Measurements: Sample and record water quality attributes before, during, and shortly after the completion of timber harvest to ensure that State water quality standards are maintained.

Evaluation: Verify that State water quality standards are being achieved.

Responsible Staff: Thorne Bay Ranger District Staff

Record of Results: Report findings to Supervisor's Office and to the community of Port Protection and residents of the Whales Resort area.

Port Protection Wind Patterns

Objective: To ensure that timber harvest on Protection Head does not adversely change wind patterns intensity at Port Protection.

Desired Result: Harvest activities do not change wind patterns and wind intensity at Port Protection.

Measurement: Record wind direction and wind speed at Port Protection and control locations before, during, and after timber harvest activities.

Evaluation: Identify factors influencing wind patterns and make recommendations concerning future harvesting on Protection Head.

Responsible Staff: Thorne Bay Ranger District

Record of Results: Prepare a brief report of results.

Karst Resources

Objective: To prevent significant or permanent adverse effects to karst resources as the result of surface management activity and determine if implemented protection measures were effective.

Desired Results: Surface management activities will not have an adverse affect on karst resources and hydrology.

Measurement: Conduct field inspections on at least 25 percent of surface management activities on high vulnerability karst.

Evaluation: Determine if mitigation was successful in avoiding any significant or permanent adverse effects to karst resources.

Responsible Staff: Forest Geologist in coordination with the Thorne Bay Ranger District.

Record of Results: Report of results to Forest Supervisor.

Annual Costs:

Personnel Needs:

Ecosystem Management

Objective: To determine if the different harvest methods prescribed in this project have been implemented and appear to be effective.

Desired Result: All types of harvest methods have been implemented and appear to be effective at maintaining structure in second-growth stands for wildlife and reducing the visual contrast between the harvest unit and adjacent unharvested stands.

Measurement: Compare unit cards and silvicultural prescriptions with observations on the ground on 20 percent of the units. Prepare narrative description and map of reserve tree size, density, and distribution.

Evaluation: Modify future unit prescriptions based on the feedback obtained.

Responsible Staff: Thorne Bay Ranger District wildlife staff and landscape architect.

Record of Results: Prepare a brief report of results.

Availability of the Planning Record

Information documenting development of this EIS is available for review during regular business hours at the Forest Supervisor's Office, Ketchikan, Alaska and at the offices of Harza Northwest, Inc., 2353 130th Avenue NE, Bellevue, Washington. It will be available during normal business hours at these locations during the comment period for the Draft EIS.

The reader also may wish to refer to the Tongass Land Management Plan, the Tongass Land Management Plan Revision (1991), the Tongass Timber Reform Act, the Resources Planning Act, and the Alaska Regional Guide and its Final EIS. These are available at public libraries throughout the region, the Supervisor's Offices in Ketchikan, Sitka and Petersburg, and at the Regional Office in Juneau.





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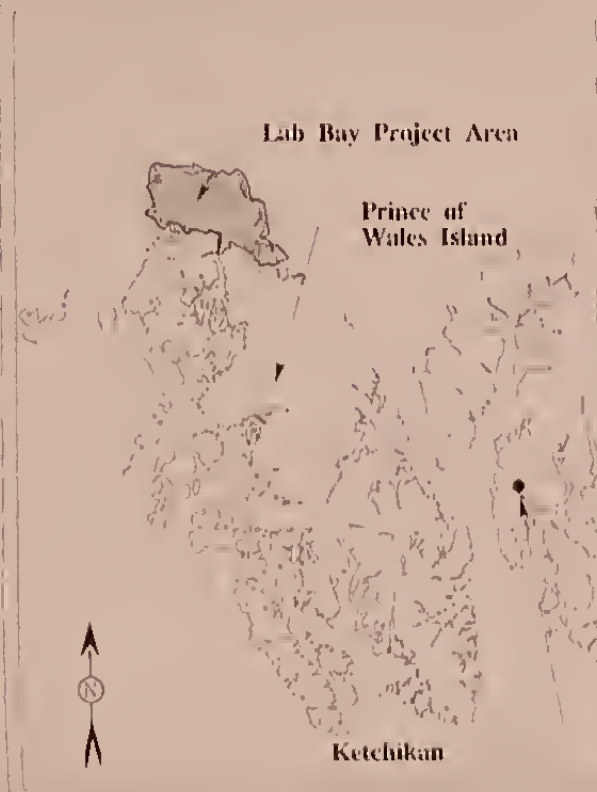
Alaska Region

Area Map

July 1995

Lab Bay Project Area Map

July 1995



- Legend
- Proposed Harvest Units
 - Lakes
 - Enumbered Lands
 - State & Private Lands
 - Previous Harvest
 - Volume Class 4 - 5
 - Volume Class 6 - 7
 - Other Forest System Lands
 - Existing Log Transfer Facilities
 - Proposed Log Transfer Facilities

- VCU Boundaries
- Existing Roads - Currently open
- Existing Roads - Proposed for closure
- Existing Roads - Currently closed
- Proposed Roads - To remain open
- Proposed Roads - Proposed closed
- Proposed Calder Tie Road
- Class 1 & 2 Streams
- VCU Numbers
- Unit Numbers



Contour Interval 200 Ft.

NOTE: Map compiled from various digital geographic data. This map may not meet National Map Accuracy Standards.



HARZA NORTHWEST, INC. Engineers and Scientists

When referring to proposed harvest units, please use VCU number and proposed harvest unit number. Example: 531.1 - 231.

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